Amanda, Field Communication Insider is an e-newsletter featuring the latest news and developments in the application of HART, FOUNDATION Fieldbus and FDI technology around the world. To ensure that you continue to receive Field Communication Insider, please add pstudebaker@putman.net to your address book and subscribe here.

One Isolator for HART and Non-HART Isolation Needs

The 2-wire HIX and the 4-wire HIT HART® Isolators from Moore Industries provide a highly economical solution to common and costly problems that plague many of today’s process loops – both with and without HART – to protect and enhance your process control and instrumentation investment.

- Can be used in HART and non-HART loops and applications
- Isolates while passing HART data
- Perform equipment maintenance without loop downtime with area isolation

Learn more.

FieldComm Group Announces OPC Foundation Alliance at ARC Forum

The two organizations are aiming to advance process automation system multi-vendor interoperability and simplified integration by developing a standardized process automation device information model. Read more.

India Working Group Meets to Review Latest Development Activities

Held Feb. 19-23 in Bangalore, India, the event featured presentations that provided updates on the latest developments involving FOUNDATION Fieldbus, HART, WirelessHART and Field Device Integration (FDI) technologies. Read more.

Technology Exhibit Planned for ACHEMA Trade Fair in Frankfurt, Germany

FieldComm Group will share an exhibition area at the trade fair with the Proﬁbus Nutzerorganisation e.V. (PNO) featuring technology walls to demonstrate FDI technology and more. Read more.

Major Industry Partners Collaborate to Advance FDI Technology
We explore how Field Device Integration (FDI) technology, through its full featured capabilities, backward compatibility and wide industry support, provides automation stakeholders with an open, future-proof standard for integration and a superior user experience. Read more.

**Update on Advanced Physical Layer for Industrial Ethernet**

The automation industry organizations are seeking to leverage the work of the IEEE 802.3cg Task Force as well as additional developments to define the requirements for an Industrial Ethernet suitable for use in hazardous locations up to Zone 0, Division 1. Read more.

**Latest Registered FOUNDATION Fieldbus and HART Products**

The number of FOUNDATION Fieldbus and HART products registered by the FieldComm Group continues to grow. Read more.

**WIRELESSHART CORNER**

**Process Sensing with WirelessHART Improves Plant Performance**

WirelessHART systems can be installed at a reasonable price with a quick ROI, improving efficiencies, finding problems, cutting maintenance costs, and extending the life of valuable plant equipment. Read more.

**PRODUCTS**

New product news you might be interested in:

- FINT Offers Affordable Way to Integrate HART Transmitters Into Fieldbus Networks
- Microcyber’s NCS-TT106x Temperature Module Has Versatile Capabilities
- Moore Industries’ HCS HART Concentrator System Performs HART-to-MODBUS RTU Conversion

**Digital Remote Sensors**

Yokogawa’s DRS system eliminates the capillaries and replaces them with electrical wiring. The electrical wiring is not affected by changes in temperature, yielding an actual level measurement. Yokogawa offers HART communication protocols to get your level information where it needs to be. Learn more.

**CALENDAR**

**Upcoming Events**

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FieldComm Group Announces OPC Foundation Alliance at ARC Forum

The two organizations are aiming to further advance process automation system multi-vendor interoperability and simplified integration by developing a standardized process automation device information model.

By FieldComm Group

Feb 22, 2018

FieldComm Group presented a display of its digital transformation technologies for the process industries at the 2018 ARC Industry Forum, held February 12-15 in Orlando, Florida. This year’s forum, marking the 22nd annual ARC event, centered on the theme, “Digitizing and Securing Industry, Infrastructure, and Cities.”

ARC Forum attendees learned how digitizing factories, cities, and infrastructure benefits both technology end users and suppliers in the era of the Internet of Things (IoT).

One of the major news items at the ARC Forum was an announcement by FieldComm Group and OPC Foundation of an alliance to further advance process automation system multi-vendor interoperability and simplified integration by developing a standardized process automation device information model. The two organizations conducted a joint session on Wednesday, February 14, entitled, “Integration Technologies and Information Modeling for Digitized Process Automation Systems.”

FieldComm President and CEO Ted Masters and OPC Foundation President and Executive Director Thomas Burke explained how field level, protocol-independent software solutions provide access to information from the plant floor to the cloud and all points in-between. The OPC Unified Architecture (UA) provides a general framework for
achieving this goal. OPC UA companion standards and information models like the Field Device Integration (FDI) information model specify industry-specific details to complete the vision.

Ongoing collaboration between FieldComm Group and OPC Foundation will build upon the common information model to deliver process automation data in context, which is the key to enabling value from enterprise systems and analytics. Suppliers of devices and applications that are members of FieldComm Group have an opportunity to benefit from this important initiative to develop a standard process automation information model by their adoption of FDI and OPC UA technologies.

FieldComm Group’s exhibit at the ARC Forum focused on technology initiatives providing the means to connect and integrate digital information. FOUNDATION Fieldbus, HART and WirelessHART devices can be the basis for digitization supporting Industrial Internet of Things (IIoT) initiatives. At the same time, the FDI standard greatly simplifies device integration and takes account of the various tasks over the entire lifecycle for both simple and the most complex devices, including configuration, commissioning, diagnostics, and calibration.

“FieldComm Group technologies enable a connected framework using intelligent field devices to reduce waste, improve safety and increase operational efficiency, and have for over 20 years,” said Paul Sereiko, FieldComm Group’s director of marketing. “There is significant value to industry as a result of a smart connected device ecosystem, which makes it possible to address performance, reliability, safety, and environmental problems that have yet to be solved by traditional approaches.”

Sereiko added, “Today, it is becoming possible to securely get the right information into the hands of problem-solvers wherever they are located, whether in a control room on-site or in a factory somewhere on the other side of the world.”

For more information, please visit the News page on the FieldComm Group website.
India Working Group Meets to Review Latest Development Activities

Held Feb. 19-23 in Bangalore, India, the event featured presentations that provided updates on the latest developments involving FOUNDATION Fieldbus, HART, WirelessHART and Field Device Integration (FDI) technologies.

By FieldComm Group

Feb 22, 2018

FieldComm Group held a meeting of its India Working Group in Bangalore, India, on February 19-23, 2018. The event featured presentations by automation industry experts from throughout the region, and provided updates on the latest developments involving FOUNDATION Fieldbus, HART, WirelessHART and Field Device Integration (FDI) technologies.

FieldComm Group's Technical Working Group meetings provide an opportunity for marketing and technical professionals to meet over multiple days and contribute to the strategic direction of the organization. The organization's goal is to ensure high-quality, market-relevant products and standards are available in the industrial automation space. It turns to experts in the industry to achieve this effort.

FieldComm Group members are encouraged to get involved and participate in the various technical working groups, which offer an opportunity to share expertise; direct technological enhancements; network with industry peers; and gain early access to technology developments, marketing strategies, and implementations.
Working Group membership is open to members, liaisons and guests. Each group maintains a roster of active participants. Members that do not register to participate in a Working Group can still monitor activities, attend meetings, engage in consensus-based discussions, and access Working Group materials through a shared workspace portal.

For more information, please visit the Global-India page on the FieldComm Group website.
Technology Exhibit Planned for ACHEMA Trade Fair in Frankfurt, Germany

At ACHEMA 2018, FieldComm Group will share an exhibition area with the Profibus Nutzerorganisation e.V. (PNO) featuring technology walls to demonstrate the capabilities of Field Device Integration (FDI) technology and the advanced physical layer for Industrial Ethernet, which is commonly referred to as “APL.”

By FieldComm Group
Feb 22, 2018

FieldComm Group is planning a major exhibit of its industry-leading automation protocols and standards at ACHEMA 2018, to be held June 11-15 at the Messe Frankfurt in Frankfurt, Germany. The event will bring together key players and decision-makers from all related sectors of the process industries.

ACHEMA is a globally renowned trade fair and congress, dedicated to chemical engineering, biotechnology and environmental protection. It is held once every three years and attracts nearly 4,000 exhibitors and nearly 167,000 visitors from around the world. This year’s event will focus on three primary topic areas: biotech for chemistry, flexible production, and chemical and pharmaceutical logistics. Other themes will include pharmaceutical technology, materials and material processing, and energy and alternative feedstock.
At ACHEMA 2018, FieldComm Group will share an exhibition area with the Profibus Nutzerorganisation e.V. (PNO) featuring technology walls to demonstrate the capabilities of Field Device Integration (FDI) technology (e.g., easy host and device integration, digital transformation and cloud connectivity) and the advanced physical layer for Industrial Ethernet, which is commonly referred to as “APL.”

FieldComm Group will also utilize its own booth with live technology kiosks demonstrating FOUNDATION Fieldbus usability, including simplified PV integration, automated like-device replacement and template-based device commissioning; smart device diagnostics for valve positioners and complex field instruments; and the Industrial Internet of Things (IIoT), including host application access to cloud-based information.

FieldComm Group members are invited to participate in the ACHEMA 2018 exhibits. To learn more about product/solution display opportunities and related activities, please call (512) 792-2300.

For more information, please visit the Events page on the FieldComm Group website.
**Major Industry Partners Collaborate to Advance FDI Technology**

We explore how Field Device Integration (FDI) technology, through its full featured capabilities, backward compatibility and wide industry support, provides automation stakeholders with an open, future-proof standard for integration and a superior user experience.

By FieldComm Group

Feb 22, 2018

As digitalization increases throughout industrial operations, there is the creation of a significant amount of additional data. Thus, more sophisticated strategies are needed to manage data from intelligent devices and other sources, determine what is relevant, and assure that relevant data is made available to the appropriate systems.

Interoperability and data transparency on all levels are key factors in the acceptance of emerging technologies in the process industries. The following article describes how Field Device Integration (FDI) technology, through its full featured capabilities, backward compatibility and wide industry support, provides automation stakeholders with an open, future-proof standard for integration and a superior user experience.

*Need for seamless integration*

In today’s complex process automation systems, field instruments from many different manufacturers have to be integrated – resulting in significant effort for installation, version management and device operation.
The latest intelligent devices can also pose an information management problem, especially when there are devices on different networks with different underlying technologies for displaying and managing information.

Responding to the need for open and standardized device integration, leading process industry foundations, including FieldComm Group, Profibus International, and the OPC Foundation, jointly developed the FDI standard. Their goal was to solve the problem of integrating field devices with the multitude of networks, operating systems and control systems commonly used in process plants.

FDI helps bring previously inaccessible data into commonly reported and displayed information, so it can be used to add value for applications and businesses. The specification is based on the IEC 61804 - Electronic Device Description Language (EDDL) standard for the description of devices. It takes account of the various tasks over the entire lifecycle for both simple and the most complex devices.

The primary objective of FDI is to dramatically simplify software installation, configuration, maintenance, and management of field instruments and host systems. Modern field instruments often include a device information file that provides software access to the features and functions of the device, one or more user interface plug-ins that integrate with host system software to enhance the usability of the device with the host, numerous user manuals, installation instructions, and data sheets.

FDI brings standardization to the packaging and distribution of all the software and tools necessary to integrate a device with a host system. All registered FDI devices are required to have an associated FDI Device Package, which is a collection of files including an Electronic Device Description (EDD)-based on IEC 61804-3, an optional user interface plug-in (UIP) based on Windows® Presentation Foundation (WPF), and instrument documentation and technology-specific files.

FDI not only supports FieldComm Group protocols such as HART, WirelessHART and FOUNDATION Fieldbus, but also Profibus, Profinet and ISA 100.11a. Through standalone communication servers, additional protocols like Modbus and EtherNet/IP are also integrated with the technology.

Preparing for digital transformation

In the industrial automation sector, there are ever-increasing demands to leverage process automation data from information systems, as well as utilize architectures for more open interfaces. Initiatives like the NAMUR Open Architecture, Industry 4.0 and the Industrial Internet of Things (IIoT) all seek to break down proprietary architecture barriers between field devices and, ultimately, cloud-based computing platforms. They are revolutionizing the way users and machines interact, as well as the way machines engage with each other.

Recognizing current trends in digital transformation, the architects of FDI partnered with the OPC Foundation to include several OPC specifications that define field device integration in the context of FDI technology. Their intention was to ensure that as systems evolve an open pathway to field device information is assured. This work holds significant value for automation end users, allowing them to take the data and information models for the applications and devices supported by FDI technology and leverage OPC-UA information modeling and corresponding services for complete application-to-device integration.

FieldComm Group and OPC Foundation, as of Q4 2017, have formed an official working group around the OPC Unified Architecture (UA) to develop an OPC-UA FDI Device Information Model for process automation. The goal of the working group is to leverage the extensive experience of FieldComm Group with the HART and FOUNDATION Fieldbus communication protocols to standardize data, information, and methods for all process automation devices through FDI using OPC UA. The OPC UA base information model and companion Device Information (DI) specification will be extended to include the generic definition and information associated with process automation devices. This information model is at the core of the FDI standard. It seamlessly integrates with OPC-UA to enable further integration with platforms like the Microsoft Azure IoT hub.

The OPC-UA FDI Device Information Model defines how the information of a field device – described by an Electronic Device Description (EDD) document – is mapped to OPC-UA Objects, Methods and Variables. The model
is mainly based on OPC-UA for Devices specification; in fact, most of the OPC-UA for Devices model has been driven by FDI requirements.

The FDI architecture brings field devices to the IIoT, with each device type represented by a Device Package. FDI specifies a Device Information Model and uses OPC-UA communication to enable other applications to access it. This model is the single access point for external applications.

FDI also addresses cyber security with manufacturer-signed packages that hosts validate to ensure they’re genuine and haven’t been altered. This reduces the maintenance costs and security implications.

**Realizing the promise of IIoT**

Throughout the process industries, developments such as the IIoT will enable the transition from reactive to predictive maintenance, as well as the optimization of asset management strategies to improve operations and reduce costs. Their promise is full utilization of digitally available information from existing, installed field instruments to improve safety, operations, and reliability. Plant floor to executive office real-time access is key to delivering value to the enterprise.

By including all tools, documents, and interfaces in a single device package, FDI improves system integration efficiency and allows easier access by Information Technology (IT) systems to Operational Technology (OT) information. Moreover, it unifies device drivers, configuration tools, diagnostics and documentation regardless of operating system with an independent and downloadable software package compatible with any FDI-registered host system.

With its device information model (set forth in IEC 62541-100), the client/server architecture of FDI technology provides all functions for modeling real devices as virtual objects for the IIoT.

Manufacturers and other industrial firms deploying IIoT applications can connect to valuable information in intelligent field devices – regardless of protocol – by using FDI to integrate the information in a process control system, asset management tool or Enterprise Resource Planning (ERP) system; visualize and evaluate the data; and then take action based on the information to prevent shutdowns, lower operating costs, reduce maintenance expenses, and become more predictive in how plants are run.

**Looking to the future**

For industrial organizations of all sizes, utilization of digital intelligence empowered by the IIoT will create more capital investment. Higher field reliability will help ensure increased uptime, safer operations, and greater efficiency. Advanced automation technology will also raise productivity, manage assets over their entire lifecycle, and optimize experts’ knowledge to drive profitable business results.

The future is sure to bring additional advancements in digital transformation. For example, the FieldComm Group-OPC Foundation Integration Working Group is currently enhancing the OPC-UA FDI Device Information Model specification to provide semantics for machine-readable information. When complete, this specification will allow cloud-based applications to process field device information without extra configuration.

Thanks to FDI, automation suppliers and end users can look forward to applying a single integration technology that can translate the binary data delivered by any communication protocol into tangible information that can be displayed and used by systems at varying levels throughout the enterprise.

**Conclusion**

The future is digital, and digital should be intuitive and easy to use. FDI is a versatile device integration technology that has been designed to meet current and future plant needs, which include investment protection, robustness, easy system administration, easy to use devices, interoperability, and simple migration.
For more information, please visit the FDI Technology page on the FieldComm Group website.
Update on Advanced Physical Layer for Industrial Ethernet

The automation industry organizations are seeking to leverage the work of the IEEE 802.3cg Task Force as well as define the requirements to achieve an Industrial Ethernet suitable for use in more hazardous locations.

By FieldComm Group
Feb 22, 2018

FieldComm Group, ODVA and Profinbus & Profinet International joined together at the recent NAMUR General Meeting to provide an update on the current status of future technology and standards for an advanced physical layer for Industrial Ethernet – commonly referred to as “APL” – that will be suitable for use in demanding applications in process instrumentation.

The automation industry organizations, in cooperation with leading control and instrumentation suppliers, are seeking to leverage the work of the IEEE 802.3cg Task Force, including amendments to the IEEE 802.3 Ethernet standard for an Ethernet physical layer operating at 10 Mb/s over single-pair cable with power delivery, as well as additional developments to define the requirements and develop the necessary technology to achieve an Industrial Ethernet suitable for use in hazardous locations up to Zone 0, Division 1.

The automation industry organizations and suppliers have formed a steering committee to coordinate the overall work effort to achieve and promote an advanced physical layer for EtherNet/IP, HART-IP and PROFINET.

“APL will be a significant advancement for our industry by extending existing Ethernet technology to address our traditional two-wire topology and intrinsic safety,” stated Ted Masters, president of FieldComm Group. “Like today, multiple protocols will be used in all facilities, but with the added capabilities of APL- and Ethernet-based technologies. With integration through FDI and its information model, our industry can now shift its focus from the protocol to capture value of the information provided by field devices.”

Based on timelines published by the IEEE 802.3cg Task Force, the industry organizations expect that enhancements to the IEEE 802.3 standard for long-reach, single pair Ethernet will be complete in 2019 and available for integration into their respective Ethernet specifications in 2020. Combined with the additional activities of process automation and instrumentation suppliers to accelerate development of technology for an advanced
physical layer, the organizations foresee that the first Ethernet-connected field devices for use in hazardous locations will appear in 2021 or 2022.

For more information, please read the Press Release on the FieldComm Group website.
Latest Registered FOUNDATION Fieldbus and HART Products

The number of FOUNDATION Fieldbus and HART products registered by the FieldComm Group continues to grow.

By FieldComm Group
Feb 22, 2018

New Registered Devices

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Process Sensing with *WirelessHART* Improves Plant Performance

These systems can be installed at a reasonable price with a quick ROI, improving efficiencies, finding problems, cutting maintenance costs, and extending the life of valuable equipment.

By FieldComm Group

Feb 22, 2018

Process industry plants are under pressure to increase production, make processes more efficient, reduce energy usage, cut maintenance costs, improve safety, and meet a host of government and industry regulations. To meet these requirements, plants must monitor all aspects of a process, acquire data from field devices, analyze the data to turn it into actionable information, and take steps to address problems.

However, many processing facilities are large, complex operations. Where do plant personnel start?

An increasing number of industrial sites are turning to wireless technology to provide reliable process and asset monitoring. The key to a successful wireless implementation is executing a strategy where wireless sensors are used to acquire data from all parts of the plant at a reasonable cost.

Many older, existing plants could benefit from adding many more measurement points, given the proven financial benefits. One reason they don't is that, in the past, these inputs would have to be wired from the sensing point, such as a pressure instrument installed at a pump, to a control and monitoring system. Adding this wiring to an existing
facility usually is a very expensive undertaking because wired sensors require power, wiring to I/O systems, and additional I/O points at the control and monitoring system. Such modifications often require significant downtime, which isn't an option as many plants operate at or near full capacity.

*Wireless*HART sensors, on the other hand, have built-in power modules, so they don't require power wiring. And, being wireless, they don't require additional I/O capacity from the plant's control and monitoring systems. These sensors are connected through a plant-wide wireless mesh network to control and monitoring systems via a gateway. *Wireless*HART sensors allow points of measurement to be added at a fraction of the cost and time required for their wired equivalents, and sensors not requiring process penetrations can be installed without any downtime.

After a *Wireless*HART infrastructure is in place, adding more sensors is quick and inexpensive in a wide range of monitoring applications. By installing *Wireless*HART acoustic sensors, for example, plants quickly can identify steam traps failing open or closed, leaking, or working improperly. *Wireless*HART temperature sensors can be installed on cooling towers, with their measurements used in efficiency calculations to confirm whether fans are running at correct speeds. And, the sensors can be utilized to provide online turbine compartment temperatures to detect leakage of hot air, an inexpensive early detection strategy.

One of the great benefits of *Wireless*HART technology is that end users can install devices themselves in a fraction of the time it takes to wire an instrument. Many plants need to hire contractors for wired instrument installation because they do not have a big staff. It takes about an hour to install a wireless device, compared to two weeks to run wire and completely install a wired transmitter.

Installing wireless transmitters and analytics software in a plant improves efficiencies, finds problems, cuts maintenance costs, and extends the life of valuable equipment. While such a solution may be new to some industrial organizations, with the help of a wireless supplier and following basic procedures, a *Wireless*HART system can be installed at a reasonable price with a quick ROI.
FINT Offers Affordable Way to Integrate HART Transmitters Into Fieldbus Networks

These protocol converters offer interconnectivity between simpler bus types, such as Modbus RTU and HART, to more sophisticated buses like Profibus DP/PA and FOUNDATION Fieldbus.

By FieldComm Group
Feb 21, 2018

FINT’s White Series gateways are the perfect solution for control system integrators who need to incorporate legacy equipment into their systems. Manufacturers of measurement devices and analyzers wishing to extend the market for their existing products are now able to offer solutions in a straightforward way and with a bare minimum of investments.

These protocol converters offer interconnectivity between simpler bus types, such as Modbus RTU and HART, to more sophisticated buses like Profibus DP/PA and FOUNDATION Fieldbus.

In its portfolio of DIN rail-mounted converters, FINT also provides solutions for manufacturers of Modbus RTU devices who want to communicate on HART and WirelessHART networks.

For more information, please visit the FINT website.
Microcyber’s NCS-TT106x Temperature Module Has Versatile Capabilities

It supports multiple thermal resistances and thermocouples.

By FieldComm Group

Feb 21, 2018

Microcyber's NCS-TT106x temperature module is a high-performance fieldbus temperature transmitter with an independent R&D communication controller. It supports multiple thermal resistances and thermocouples. With thermal resistance support for 2/3/4-wire connection mode, thermocouples can use cold end compensation functions.

Multiple protocol support:

- NCS-TT106H: HART Protocol
- NCS-TT106P: Profibus PA Protocol
- NCS-TT106F: FOUNDATION Fieldbus H1 Protocol

High accuracy (for common thermal resistance and thermocouple):

- ±0.09Ω for 0~500Ω
- ±0.7Ω for 0~400Ω
- ±0.2°C for PT100 (-200°C~850°C)
- ±0.2°C for PT1000 (-200°C~850°C)
- 0.02mV for -100mV~+100mV
- 0.4°C for K-Thermocouple (-200°C~1372°C)
- 0.9°C for S-Thermocouple (0°C~1768°C)
Easy Integration:

- Provides multiple electrical integration files, such as DD, EDD, CFF and GSD

For more information, please visit the Microcyber Corporation website.
Moore Industries’ HCS HART Concentrator System Performs HART-to-MODBUS RTU Conversion

When operating in point-to-point and digital multidrop HART networks, the HCS acts as a HART master and monitors a single or multiple HART smart instruments.

By FieldComm Group
Feb 21, 2018

The HCS HART Concentrator System converts a HART digital signal to serial (RS-485 or RS-232) MODBUS RTU communication protocol. This allows HART transmitters and valves to interface directly with MODBUS-based monitoring and control systems.

When operating in point-to-point and digital multidrop HART networks, the HCS acts as a HART master and monitors a single or multiple HART smart instruments. All process and diagnostic data carried on the HART data string is converted to MODBUS RTU.

In a digital multidrop HART network, up to 16 HART instruments digitally communicate on the same wires. The HCS can be set to monitor any or all instruments and/or valves within the network. Only one MODBUS address, and one communication link (such as twisted wire pair), is needed to send the process and diagnostic data from up to 16 HART devices to a MODBUS host.

The HCS works with every HART-compatible device including smart multivariable mass flow, pressure, pH and temperature transmitters; coriolis, magnetic, ultrasonic and vortex flow meters; radar and hydrostatic level transmitters; valve positioners and damper operators.

All HART process information, including primary, second, third and fourth process variables are converted to MODBUS RTU and available to the MODBUS host system.

For more information, please visit the Moore Industries website.